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ON MELOSPIZA MELODIA IN ONTARIO

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A STUDY of variation in *Melospiza melodia* in Ontario cannot avoid a consideration of certain questions beyond our boundaries. Consequently this paper is in a measure, a study of the Song Sparrow in eastern North America.

For the most part the material on which our observations are based is in the collection of the Royal Ontario Museum of Zoology. The Museum's series of eastern Song Sparrows comprises 493 specimens. The majority of them is from Ontario and represents summer population samples, or a working series of breeding birds, from rather regularly distributed localities through much of the Province. It also embodies some material from contiguous provinces and states—Manitoba, Michigan, Ohio and Quebec. Also specimens from areas farther removed—North Dakota, West Virginia, Nova Scotia, and the New England States—have been pertinent and extremely useful.

STATUS OF *Melospiza melodia* IN ONTARIO

Melospiza melodia occurs widely in the province in summer. In southern Ontario it is a common inhabitant of thickets bordering fields, streams, the shores of ponds and lakes, the edges of woodlots and forested tracts and even in shrubbery about cities and towns. Northward it is not less common in suitable habitats, but due to extensive tracts of heavy forests there is more interruption of occurrence. The species does not reach its range limit until the Hudsonian Zone is approached. It is to be found about southern James Bay in the eastern portion of northern Ontario and at Favourable Lake in northwestern Ontario but its scarcity in the latter area suggests that it does not occur much farther northward.

Very little is known of the migratory routes followed by the Song Sparrows which inhabit the various sections of our irregularly shaped

province. It is one of the early returning migrants in spring, reaching southern Ontario in early March. A month later first arrivals have reached central sections of the province. Song Sparrows which nest in far northern Ontario have probably attained their breeding grounds shortly after mid-May. In the Toronto region there is a spring peak of numbers about April 7. Another peak occurs about May 11.

The autumn peak at Toronto has been determined as about October 13. The maximum fall flight in extreme southern Ontario is evident in late October. By early November migrant Song Sparrows are gone from the province. A few winter in favourable localities south of the Georgian Bay—Ottawa line, somewhat more frequently in the more southern counties.

VARIATION IN *Melospiza melodia* IN THE EAST, WITH PARTICULAR REFERENCE TO ONTARIO

At the outset it may be remarked that significant differences in the measurements of breeding Song Sparrows from broad geographic sections of Ontario have not been found. However, considerable individual variation in the matter of size has been noted. (Measurements of specimens of the various races recognized are tabulated in a following section of this paper.) The geographic variations observed, pertain to tone, colour and pattern of the plumage.

Song Sparrows which breed in the area north and west of a line drawn from eastern Lake Superior to Hannah Bay, on James Bay, are fairly constant in their display of racial characters. Rather than a detailed description of this form it may be briefly characterized as,—with a general greyish ground colour above, with extensive and contrasting black markings on the feathers of the back, which are more or less margined with pale grey. The tail, dorsally, is “fuscus” fading to “hair brown” in the more worn specimens. “Auburn” markings, though present in varying degree and most noticeable on the sides of the crown, are unimportant so far as a general characterization of the form is concerned. Ventrally the black streaks on the breast and sides of neck, sharply contrast with the whitish ground colour. Here again reddish brown tinges are inconspicuous and unimportant in gross description.

The Song Sparrow in this region is obviously a well-marked form. From the region outlined above it has been traced into central and southern Manitoba, south into North Dakota. Comparisons with a series of specimens from Walsh County, North Dakota (which is adjacent to Towner County—type locality) clearly identifies the Song Sparrows of western and northern Ontario and the northwestern portions of central Ontario as *Melospiza melodia juddi* Bishop.¹

¹*Auk*, 13 : 132-134, 1896.

The Museum's Ontario series shows that a progressive change in *Melospiza melodia* occurs southeastward from the Lake Superior—James Bay line. Warmer colour in the dorsal region becomes more apparent. Specimens from Lake Abitibi have the grey ground colour washed with reddish brown and the dark dorsal markings are somewhat reduced. This is true of specimens from Amyot, etc., in central Ontario. We interpret, in this area, a gradual blending of characters between *M. m. juddi* and the race next to be discussed.

From Temagami and the Georgian Bay region eastward to the Ottawa valley, through the highlands of southern Ontario, the majority of Song Sparrows tend distinctly toward reddish-brown in their general dorsal aspect. However, there is far more individual variation in this section of the province than is found among birds in the north and west as discussed above. The following characterizes the majority from this section: The black markings on the back are restricted and conspicuously margined with reddish-brown. The ground colour of the dorsal region generally is conspicuously washed with the same colour. The reddish-brown may vary from "auburn" to "russet" and some pale grey may be apparent along with black markings but reddish-brown dominates on the crown, nape, back, wings and tail. Worn breeding plumages still reveal the general warm colour though it may have altered to "snuff brown". Ventrally the dark streaks are a mixture of black and reddish-brown.

This form of *Melospiza melodia* has been traced eastward through southern Quebec to Nova Scotia. No differences between well marked birds from Ontario and those from Nova Scotia have been noticed. Individual variation is displayed in specimens from either extremes of range, Ontario or Nova Scotia, but such is more prevalent in the western or Ontario portion of the range, apparently due to race mixtures there, a feature not involved in Nova Scotia.

No difficulty is experienced in applying the name of the typical form to this reddish-brown bird if we are prepared to accept all the assumptions that have been made in connection with it. Bangs² has remarked that "the type of *Fringilla melodia* Wilson, was a bird in winter plumage, of large size, and very rusty coloration. Such birds, large and very rusty, occur on migration in the Eastern United States, and I have always believed that they represent a race different from the breeding bird of the Atlantic seaboard from Massachusetts to the Carolinas. I have, however, never been able to find where this large, red form breeds." In view of this statement (in 1912) it is not evident

²Proc. New Eng. Zool. Club, 4: 85-87, 1912.

why Thayer and Bangs³ after discovering what the present authors (and Todd⁴) believe to be the range of the typical form, re-described it two years later under the name *Melospiza melodia acadica*. However, in their description they state, "size and proportions about as in Massachusetts specimens except of the bill, which averages smaller and more slender." Our measurements of specimens from the two localities (Canadian and New England) are contrary to this. Thirteen specimens from New England in the R.O.M.Z. collection average distinctly smaller than Nova Scotia, southern Quebec and Ontario birds, in length, tail and wing measurements and most markedly in the length-breadth measurements of the bill. The differences as noted by us, if supported by observation of a larger series, suggest that breeding birds from New England should be distinguished by name, on the grounds of smaller size.

Todd⁴ accepts Philadelphia, Pennsylvania, as the type locality of Wilson's bird. This seems logical on historic grounds. Bangs made out a good case regarding the existence of the actual type and he emphasized that Wilson's specimen, in winter plumage, was "large and very rusty." On the basis of our measurements and on purely geographical grounds, Wilson's bird could well be regarded as a winter representative of the Nova Scotia, southern Quebec and Ontario population. We therefore apply the name *Melospiza melodia melodia* to the reddish-brown Song Sparrows of central and southern Ontario.

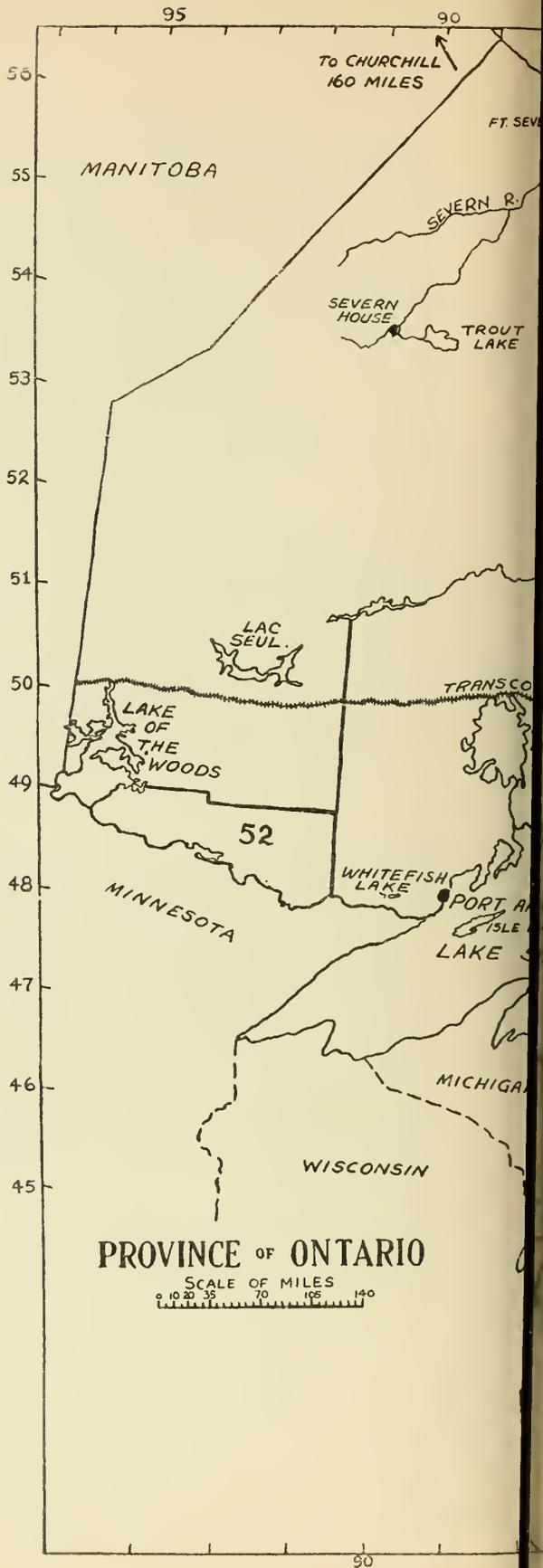
In the counties bordering Lake Erie, the area adjacent to Lake Huron, and rather sporadically elsewhere in southern Ontario a third Song Sparrow variant occurs. It may be grossly characterized as dull or drab in its general appearance. The ground colour of the back is greyish but slightly darker in tone and warmer in colour than *juddi*. The black markings of the back average more extensive than in *melodia*, more like *juddi*, but they are usually not as contrasting as on the latter, partly due to the relative absence of pale grey borders. The restricted reddish-brown markings dorsally, on the crown, on the margins of the feathers of the back and tinging the general grey ground-colour, average darker than in *melodia* and do not add brilliance to the general effect. The dorsal surface of the tail is most like *juddi*, lacking the warmer and brighter effect of *melodia*. The dark markings on the breast and sides of the neck do not contrast as sharply with the light ground colour as in *juddi* which is whiter, and possesses more admixture of reddish, tending toward *melodia*.

³*Proc. New Eng. Zool. Club*, 5 : 67-68, 1914.

⁴*Auk*, 47 : 257, 1930.

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Specimens of this race from southern Ontario are similar to or indistinguishable from specimens originating to the south or west (West Virginia, Ohio, and Michigan). The name to be used for them may be debated. Todd⁴ originally applied the name *M. m. beata* Bangs² to birds of the eastern Mississippi drainage area, showing that he regarded the form described by Bangs from Florida (two taken April 17) as representing this population. Later Wetmore,⁵ after examining Bangs' type concluded that it represented the race *M. m. juddi*. Consequently *beata* was a synonym of *juddi* and he described a bird from Pocahontas County, West Virginia, naming it *M. m. euphonia*, which name he suggested was "for the present" applicable to Song Sparrows of the more eastern Mississippi valley generally. The differences in the conclusions of Todd and Wetmore seem very natural in view of the similarity between *juddi* and the Song Sparrows of the eastern Mississippi drainage area. The uncertainty, even the impossibility of absolutely determining the genetic relationship of an individual migrant, eastern Song Sparrow, is apparent to us.

We have remarked at the first of our discussion of variation of *Melospiza melodia* in Ontario that size differences noted have no geographic correlation. If then we discount the large beak emphasized by Bangs in his characterization of *M. m. beata* the remainder of his remarks are as follows,—“Similar to *M. melodia melodia* (Wils.), . . . general colour darker and grayer, with little admixture of rusty in the upper parts; black striping of back heavy and pronounced; lateral crown stripes very dark brown.” The characterization of *M. m. euphonia* Wetmore is as follows,—“Similar to *Melospiza melodia melodia* (Wilson) but distinctly darker above, being grayer, with dark markings generally more distinct; sides of head grayer, less buffy or brown; tail averaging darker.”

The two descriptions quoted above are essentially the same which is not helpful. However, the type of *M. m. euphonia* has been seen and a comotype from Monogalia County, West Virginia (west of the mountains and approximately 100 miles north of the type locality) was established for our comparisons. The Ontario birds under discussion are definitely the same. Since Wetmore differentiated his bird from Bangs' type by comparison then we conclude that the name *M. m. euphonia* can be applied to the drab Song Sparrow of southern Ontario. Further, our extension of the breeding range of *juddi* northeastward to James Bay and the information presented on the migration periods of Song Sparrows in the Ontario area would seem to add probability to the occurrence of representatives of northeastern *juddi* in Florida on April 17. We therefore follow Wetmore and use the name *M. m. euphonia* for the variant under discussion.

⁵Smithsonian Misc. Coll. 95, 1-3, 1936.

MEASUREMENTS OF THE THREE RACES OF *Melospiza melodia* FOUND
IN ONTARIO*

Race	Sex	Weight	Wing-spread	Length	Wing	Tail	Culmen	Width of Bill
<i>juddi</i>	♂ ♂	[2] 22.7-23 (22.85)	[5] 200-220 (210.8)	[21] 150-164 (155.1)	[22] 63-72 (67.2)	[22] 63-71 (67.9)	[22] 10.75-12.75 (11.67)	[22] 5-6.5 (5.77)
		—	[9] 212-223 (219.5)	[19] 148-170 (159.1)	[34] 62-72 (67.1)	[34] 63-73 (67)	[34] 11-12.5 (11.9)	[34] 4.5-6 (5.6)
<i>euphonia</i>	♂ ♂	[3] 21-23 (21.8)	—	[11] 149-161 (156.9)	[13] 63-70 (66.67)	[12] 63-72 (67)	[13] 10.5-12.5 (11.4)	[13] 5-5.75 (5.29)
		—	[3] 200-215 (207.3)	[12] 148-158 (152.8)	[14] 61-66 (64)	[14] 59.5-66.5 (63.9)	[14] 10.5-12.5 (11.59)	[14] 4.75-6 (5.29)
<i>juddi</i>	♀ ♀	[5] 20.5-23 (21.95)	—	[8] 142-168 (152.5)	[13] 62-67 (63.9)	[13] 61-68 (64.6)	[12] 10.5-12 (11.4)	[12] 4.5-5.5 (5.1)
		—	[1] 200 (200)	[12] 147-160 (153.25)	[12] 60-65 (62.33)	[12] 62-65 (63.4)	[12] 10.5-12 (11.31)	[12] 4.5-5.75 (5.14)

*The measurements are in millimetres. The number of specimens measured in each case is first recorded in square brackets. This is followed by the minimum and maximum measurements. The average measurement appears last, in parentheses. Only specimens exhibiting well-marked colour and tone characters of their respective races were used.

ADDITIONAL REMARKS

In trying to make lucid the major tendencies disclosed in our study particularly with reference to variation in Ontario, certain observations have been purposely omitted, or not emphasized. These can now be added.

A midwestern, or what might be thought of as a prairie race of the Song Sparrow, *Melospiza melodia juddi*, ranges far to the east in the north. There are several parallels of this among animals. We believe these eastern extensions in the north are significant in the matter of redistribution following the glacial periods. However, in identifying *juddi* from the Ontario area we find the case is clear cut and without confusion. Specimens of *juddi* from Ontario may average very slightly darker than prairie birds but not significantly so.

In central Ontario *juddi* merges with *melodia*, in the western range limits of that form. *M. m. melodia* is found in its purest form in southern Quebec and Nova Scotia. (Perhaps this, the typical race, occurs somewhat southward along the mountains in the eastern United States and it should be added that its limits of range in northern Quebec are unknown. Also perhaps the New England Song Sparrow, though reddish-brown in general appearance, may be distinguishable by its smaller size.) Within the Ontario area, specimens from Renfrew, northern Hastings and Victoria counties, Muskoka and Parry Sound districts, Algonquin Park and the Timagami region largely represent the form *melodia*. Individuals from elsewhere, York and Simcoe Counties, etc., are best referred to this form although some from these localities are indeterminate between *melodia* and *euphonia*, or are referable to *euphonia*.

In extreme southern Ontario a dull or drab Song Sparrow, for which we choose to apply the name *M. m. euphonia*, is found. As has been pointed out, difficulty has been experienced in classifying many southern Ontario birds. Our area is obviously marginal territory of both *melodia* from the east and *euphonia* from the south. Specimens more definitely referable to *euphonia* originate from Long Point and on the Ontario shore of Lake Huron north to Bruce Peninsula. Occasional specimens from York County, Peel County, etc., seem referable to this form. It is of interest that our Manitoulin Island series, a remarkably uniform lot, is neither good *euphonia* nor *melodia* but across the channel, in Bruce County, distinct *euphonia* tendencies are apparent. Prince Edward County specimens are likewise intermediate. Occasional specimens even from the trough area of Lake Nipissing central to the highlands where more typical *melodia* representatives occur, apparently show *euphonia* influence. From one place, namely Thedford in Lambton County, a series of five early June specimens show that three are referable to *euphonia*, one, without thought of its genetic probabilities, is *melodia* while a third appears distinctly like *juddi*! This is the only case of *juddi* or a *juddi*-like bird from southern Ontario in summer.

Difficulty has been experienced in deciding where the northern limits of *euphonia* influence occur. Where *juddi* and *melodia* meet in central Ontario some of the intermediates are like, or even indistinguishable from, *euphonia*! This strongly suggests that the Song Sparrows of the eastern Mississippi drainage region which we call *euphonia* had their origin in an ancient meeting of two forms (*juddi* and *melodia*) south of the Great Lakes, or in other words, south of the last continental glacier. The extent of the territory occupied by this hybrid race, if such it is, would seem to justify the nomenclatural recognition given it. If a so-called "reddish phase" of *M. m. euphonia* occurs within the range of this form in the breeding season we know of no way to distinguish it from *melodia*.

An interesting question has arisen pertaining to the advent of *euphonia* in southern Ontario. This region is south of where *euphonia*-like birds occur from a mixing of *juddi* and *melodia* over the upper Great Lakes. The senior author recalls that large "reddish-brown" Song Sparrows were formerly more characteristic of southern Ontario generally. A very large and well-cared-for series of specimens from this region collected prior to 1905, from Windsor in the extreme south to Muskoka District, are practically all readily referable to *melodia*. Specimens from the same region taken recently reveal good *euphonia* and *euphonia* × *melodia* and *melodia*. We have considered carefully the fact that the early specimens were largely taken in spring. We are aware also that some change of colour (foxing) occurs in Song Sparrows after thirty or forty years. It seems quite possible that the duller race of Song Sparrow (*euphonia*) has pushed northward beyond the lower Great Lakes in recent years. There are several undoubted parallel examples of this among birds, but concerning species, not races. If such is assumed, it might help explain the confused and jumbled racial status of *Melospiza melodia* in southern Ontario. We have noted that *juddi* and *melodia* gradually blend their characters where they meet over the upper Great Lakes in central Ontario. Although blending between *melodia* and *euphonia* may be interpreted from certain specimens originating in southern Ontario, population blending is not as complete in this area. This might be the effect of a recent incursion of one race into the range of another; a racial interdigitation which would ultimately disappear. All of these issues are obscured by the slight differentiation found in eastern Song Sparrows. Racial study of eastern Song Sparrows is a matter which has demanded comparisons of good series representing various local populations; any attempt to classify individuals is fraught with uncertainty.

Our interpretation of the races of *Melospiza melodia* in Ontario is therefore as follows:

M. m. juddi: A well-marked form which breeds in western and northern, and the northwestern portions of central Ontario. This is an eastern penetration of a western form in the north. It intergrades with the typical form, *M. m. melodia* in central Ontario.

M. m. melodia: The breeding range of this, the typical race, extends into central and southern Ontario from the east. It merges with the other two Ontario races as pointed out in the foregoing and following statements.

M. m. euphonia: This form penetrates the province from the south. It breeds in the area bordering Lake Erie and sporadically northward, mingling and intergrading with *M. m. melodia* north to Manitoulin Island and east to Prince Edward County.

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